

ON SOME RATS AND MICE FROM THE SOUTH
SEA ISLANDS. (PART I. *RATTUS*
CONCOLOR GROUP)

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ONE PLATE AND ONE TEXT-FIGURE

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In the spring of 1932, Mr. G. Yosino collected some rats in the Micronesia, and these specimens were delivered to me for examination by the kindness of Prof. E. Kinoshita of the Hokkaido Imperial University.

The Micronesia lie in the Pacific Ocean, between 0° and $20^{\circ}\text{N}.$, roughly parallel to the New Guinea-Solomon line, and consist of numerous islets which are generally divisible into four main groups: the Palaos, Carolines, Mariannes and the Marshalls enumerated from west to east. Of these, the topographically western islands, the Palaos, Carolines and the Mariannes, are much different in geological construction from the Marshall group; the islands in the former group are for the greater part volcanic and densely wooded, while those in the latter are coral reefs and none is raised higher than 10 feet above the level of the ocean.

The specimens are 32 in number, which can be classified into three groups: the *Rattus concolor* or smaller *Rattus* group, the *Rattus* group including large rats such as *Rattus norvegicus* and *Rattus rattus*, and the *Mus* group. The present paper concerns only with the first group.

The *concolor* rats resemble the rats of the *Rattus rattus* group in both external and cranial characters, but can be distinguished from the latter by having a shorter head and body, and in the female the teats are always eight in number ($2 \times 4 = 8$), while in the *Rattus rattus* group the teats are usually ten ($2 \times 5 = 10$). The *concolor* rats are long known to be abundant throughout the Malayan region from the Peninsula and Sumatra to Celebes and the Philippine Islands. Of the rats belonging to the *concolor* group inhabiting the Pacific islands, *Rattus*

exulans Peale originally from Tahiti, is known since 1848. The same species has been recorded subsequently from various islands, so that the species seems to be widely distributed on the whole Pacific islands.

The present collection contains two species of *concolor* rats. One of them is undoubtedly to be identified with *Rattus exulans*, while the other which is represented by four specimens, seems to be new to science.

Before going into descriptions of these species, I would like to express my thanks to Prof. E. Kinoshita who kindly gave me the chance of examining the precious specimens, and also to Dr. H. J. V. Sody of Java who favored me with the gift of several specimens of rats collected in Celebes and Java.

Genus *Rattus* Fisher, 1803

1. *Rattus exulans* Peale, 1848

- *1848. *Mus exulans* Peale, U.S. Expl. Ex., Mamm., 1, p. 47.
- 1895. *Mus exulans* Thomas, Proc. Zool. Soc. London, p. 338.
- 1896. *Mus exulans* Waite, Mem. Aus. Mus., 3, p. 165.
- 1909. *Mus exulans* Lyon and Osgood, U.S. Nat. Mus. Bull. 62, p. 148.
- 1914. *Epimys exulans*, Revilliod, Nova Caledonia Zool., 1, L. iv, No. 9, p. 363.
- 1916. *Rattus exulans* Longman, Mem. Qld. Mus., 5, p. 28.
- 1916. *Rattus exulans* Longman, Common Rodents with list of Australian species, p. 18.
- 1925. *Rattus exulans* Thomas, Ann. Mag. Nat. Hist. (9) 16, p. 243.
- 1926. *Rattus exulans* Souef, The wild animals of Australia, p. 125. Specimens examined: Nine from the Marshalls and four from Yap. Range: Polynesia, Melanesia and Micronesia.

Characters: A large member of the *Rattus concolor* group, distinguished from *Rattus concolor* and other *concolor* rats of the Malay Archipelago such as *Rattus ephippium* of Borneo and Java, *Rattus vulcani* of the Philippine Islands and their allied subspecies, by having a considerably longer tail.

Fur scanty, hair of medium length, mixed with longer and thicker hairs of bristle texture attaining 10-14 mm on the back. In young specimens the bristles are missing and the fur is soft throughout. On

*Important but inaccessible to the author.

the upper parts, soft hairs are usually tipped with Mars yellow of Ridgeway, which color is variable from buck-thorn brown to orange or ochraceous-orange. Spiny hairs grayish buff with blackish or chestnut-brown tips. they become gradually paler on sides. Under parts whitish gray or almost pure white, without any cinnamon wash. Boundary of upper and under parts comparatively distinct in some specimens. Hands and feet usually cream buff or ivory yellow, sometimes with a faint line of dark extending down from ankle. Ears rounded and of considerable breadth and length, but they do not reach eyes when laid forwards.

Skull and teeth not peculiar. (See fig. 1 and Pl. 5; for measurements see Table I.)

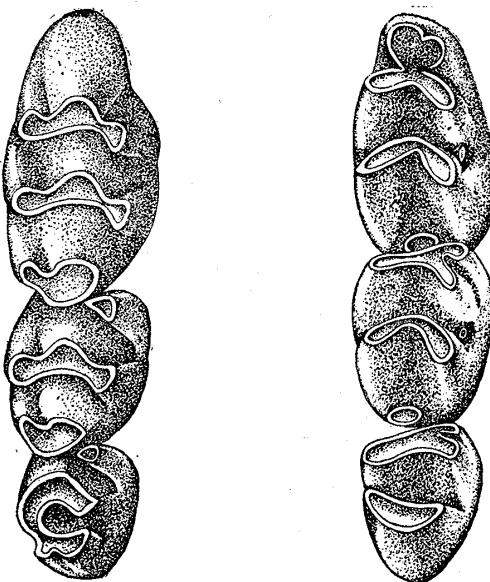


Fig. 1.—*Rattus exulans*. Cheek teeth. $\times 12$. Sketched on No. 1 of Marshalls.

Remarks: According to Miller's description (1924), *Rattus hawaiiensis* Stone (1917) from the Hawaiian Islands and *Rattus raveni raveni* Miller and Hollister (1921) from middle Celebes seem to resemble *R. exulans* very closely. According to Miller, *R. exulans* may be separated from the Hawaiian and Celebesian rats by having 'a slightly more robust form to the rostral portion of the skull, and in the slightly paler, less yellow, buffy element in the general body color' (Miller 1924, p. 4). But the shape of the rostrum seems to me of little value for the distinction of species. As evidence for this fact, I have a specimen of *R. exulans* from Yap (No. 28), in which the rostrum is especially

MITOSI TOKUDA

specimen No.	locality	sex	head and body	tail	hind foot	ear	greatest length of skull	zygomatic breadth	nasal length	interorbital breadth	fronto- molar length	incisivulum formame	greatest length of upper molar	length of tympanic bulle	breadth of upper roots of incisor	breath of posterior teeth worn				
1	Marshalls	♀	110	155	28.0	18.5	33.0	29.0	16.0	12.2	4.9	9.0	15.5	5.5	5.8	1.5	7.0	6.0	moderately	
2	do.	♂	100	140	25.0	16.0	—	—	—	9.9	4.8	—	—	5.0	5.5	1.5	—	—	5.2	slightly
4	do.	♂	102	140	26.0	16.0	30.0	25.5	14.0	9.9	4.6	8.0	14.0	5.2	5.2	1.4	5.9	5.3	slightly	
7	do.	♂	120	145	28.0	17.0	33.0	29.0	16.0	12.1	4.9	9.0	15.2	5.5	5.5	1.5	6.8	5.8	moderately	
9	do.	♂	75	118	25.0	15.0	—	—	—	9.2	4.4	7.2	—	4.2	5.2	1.4	—	—	5.4	slightly
10	do.	♂	127	156	28.0	18.0	35.2	30.8	16.0	12.5	4.9	9.0	16.0	5.8	5.9	1.6	7.0	6.1	much	
11	do.	♂	105	—	27.5	18.0	—	28.2	14.5	—	4.4	8.2	—	5.4	5.4	1.5	6.6	5.5	moderately	
13	do.	♀	102	132	26.3	16.2	30.0	26.2	14.5	—	4.5	7.5	14.0	5.2	5.0	1.4	6.0	5.3	moderately	
17	do.	♀	108	130	25.5	14.0	32.8	28.2	14.5	11.8	4.5	8.4	15.5	5.5	5.4	1.5	6.0	5.5	moderately	
25	Yap	♂	125	145	26.0	17.0	36.0	30.0	—	13.0	5.4	8.8	—	5.6	5.5	1.6	6.5	6.3	moderately	
27	do.	♂	110	147	26.0	16.0	34.0	27.0	14.0	11.5	4.5	8.2	—	5.5	5.2	1.4	5.7	5.7	slightly	
28	do.	♂	107	140	25.5	15.0	33.5	27.0	14.0	12.0	4.5	8.0	14.5	5.5	5.0	1.3	5.7	5.0	slightly	
29	do.	♂	90	120	24.0	14.2	30.0	24.6	12.9	10.4	4.3	7.0	13.2	4.5	5.0	1.3	5.5	5.3	slightly	

Table I.—Measurements of the specimens of *R. exulans* from Marshalls and Yap in mm. As compared with the figures given in previous authors' works the specimens under consideration appear to have rather short head and body, probably because they had been preserved in formalin for several months.

RATS AND MICE FROM THE SOUTH SEA ISLANDS

slender and foramen incisivum is very narrow. Moreover, the color of the *concolor* rats shows considerable individual variation. Therefore, both the Hawaiian and Celebesian forms are probably to be identified with *R. exulans*.

2. *Rattus micronesiensis* sp. nov.
(Pl. 5)

Type: Subadult female.

Type locality: Ponape Island.

Specimens examined: One from Ponape, one from Yap, two from the Palaos.

Diagnosis: This species is allied to *Rattus exulans*, but differs from it by having a smaller body, proportionally shorter tail and feet, and also by a darker color of the pelage. Ears are also short and when laid forwards, they reach only far behind eyes.

Color and external characters: As compared with *R. exulans*, color darker and with more yellowish tint; bristle hairs thinner and with chestnut brown or blackish tips so that the fur of both above and below is considerably softer. Whitish-gray or slaty bases sometimes extend ventrally and darken the under parts. Some specimens have cinnamon wash here.

Skull and teeth: Skull frail, short, rounded and high. Profile of skull faintly convex from nasal to supraoccipital, and not flattened on interorbital region as in *R. exulans*.

Specimen No.	Locality	Sex	head and body	tail	hind foot	ear	greatest length of skull	basilar length	zygomatic breadth	nasal length	interorbital breadth	palatal length	diameter	foramen incisivum length	length of upper molar series	breadth of I	length of tympanic bullae	breath of rostrum over roots of incisor	teeth worn
19	Ponape	♀	110	133	25.0	15.5	31.5	26.5	—	11.0	4.6	8.5	14.5	5.6	5.2	1.5	5.5	5.5	moderately
26	Yap	♂	110	135	25.0	14.5	32.5	28.2	15.0	12.0	4.7	8.5	15.0	5.8	5.1	1.5	6.0	6.0	much
32	Palaos	♀	109	122	25.0	15.0	—	26.5	14.5	—	4.5	8.2	—	5.6	5.1	1.5	6.0	5.6	moderately
33	do.	♂	100	115	24.0	15.0	30.2	—	—	11.0	4.3	7.7	14.0	5.2	5.1	1.5	6.0	5.5	moderately

Tabl. II.—Measurements of *R. micronesiensis* in mm.

Tympanic bullæ narrow and high. Dentition rather small but width of the palate between both molars wider than in *R. exulans*. Patterns of molars nearly the same as that of *R. exulans*.

Remarks : In the size of the body this species comes between the larger rats of the group such as *Rattus exulans* and the smaller ones such as *Rattus buruensis* Allen of Bouru Island. In external measurement it closely approaches *Rattus raveni eurous* Miller and Hollister of Celebes. However, this species may be distinguished from the latter species by much less reddish color of the pelage.

PLATE

EXPLANATION OF PLATE 5

Nos. 10, 7, 1, 17, 13, 4. Skull of *Rattus exulans* from the Marshall Islands arranged in accordance with age, No. 10 being the oldest and No. 4 the youngest. $\times 1$.

Nos. 28, 25. Skull of *Rattus exulans* from Yap. No. 28 showing especially slender rostrum. $\times 1$.

Nos. 26, 32, 19. Skull of *Rattus micronesiensis* sp. nov. No. 26 from Yap, No. 32 from Palaos, 19 from Ponape. $\times 1$.

RATS AND MICE FROM SOUTH SEA ISLANDS
MITOSI TOKUDA

PLATE 5

